



Harlequin Duck

Histrionicus histrionicus

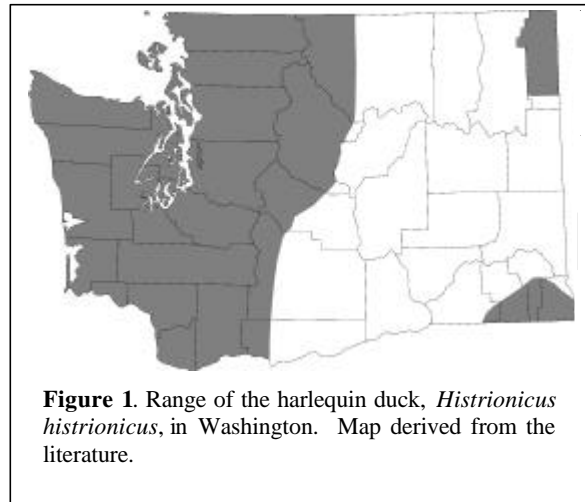
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Written by Jeffrey C. Lewis and Don Kraege

GENERAL RANGE AND WASHINGTON DISTRIBUTION

Harlequin ducks winter along the Pacific Coast from the Aleutian Islands to northern California and along the Atlantic Coast. Their breeding and summer range extends from the coastal mountains of Alaska to California, along the northern Rocky Mountains to northwestern Wyoming, and along the north Atlantic Coast, southern Greenland, and Iceland (Bellrose 1980).

In Washington, harlequins historically breed in the Olympic Mountains, the Cascades, and the Blue and Selkirk Mountains (see Figure 1; Jewett et al. 1953, Schirato 1994); however, their presence in the Blue Mountains is now in question (Schirato 1994). Wintering areas include northern Puget Sound, northern Hood Canal, the Strait of Juan de Fuca, San Juan Islands, and the outer coast. Significant numbers of harlequins that breed in Washington molt and winter in the Strait of Georgia, British Columbia (I. Goudie, personal communication). Also, some harlequins that molt and winter in Washington breed in interior British Columbia, Alberta, Idaho, Wyoming, and Montana.



RATIONALE

The harlequin duck is a Washington State Game species that provides year-round recreation for consumptive and non-consumptive users. This species is limited by low productivity, older age at sexual maturity, and low intrinsic rate of population growth (Goudie et al. 1994). They are also sensitive to human disturbance (Cassirer and Groves 1994), which is likely to decrease their productivity.

HABITAT REQUIREMENTS

During the nesting season (April-June), adult harlequin ducks require fast-flowing water with loafing sites nearby. Streams usually have substrate that ranges from cobble to boulder, with adjacent vegetated banks. They have been found more often at distances >50 m (164 ft) from roads or trails, and in stream reaches with mature and old growth forest cover (Cassirer and Groves 1994). Whereas harlequins generally appear to avoid certain types of human disturbances, some anecdotal evidence has shown that individuals may use and even nest in areas that are regularly

visited by humans (Cassirer et al. 1993). Harlequins often nest on the ground (Bengtson 1972), however, cavities in trees and cliff faces also serve as nest sites (Cassirer et al. 1993). Midstream loafing sites are an important part of suitable habitat (Cassirer and Groves 1994). Since adult females show fidelity to nest sites, it is unlikely that they will relocate to new nesting areas once they are disturbed (Wallen and Groves 1989). However, radio-tagged harlequins have used new nest sites after a nest failure the previous year (Cassirer et al. 1993).

Broods remain near nesting areas for the first few weeks after hatching, then move downstream during the summer (Kuchel 1977, Wallen 1987, Cassirer and Groves 1989). Broods prefer low-gradient streams with adequate macroinvertebrate fauna (Bengtson and Ulfstrand 1971). Preferred prey include crustaceans, molluscs, and aquatic insects (Cottam 1939). Aquatic insect larvae appear to make up the bulk of the diet for juveniles and for adults during the breeding season (Cassirer and Groves 1994).

During winter, harlequins forage and loaf along boulder-strewn shores, points, gravel substrates, and kelp beds. Prey species occur chiefly on rock substrate (70%) and gravel substrate (22%) (Vermeer 1983). Most wintering harlequins occur within 50 m (164 ft) of shore in saltwater areas (Gaines and Fitzner 1987).

LIMITING FACTORS

Low benthic macroinvertebrate abundance may limit the productivity of harlequin ducks (Bengtson and Ulfstrand 1971). Human disturbance discourages nesting at traditional sites and thereby decreases productivity. A high tendency for individuals to breed at the same location year after year may result in a separation of populations with little chance to replenish stable or declining populations. Populations are highly sensitive to additional mortality from such causes as hunting, oil pollution, or food contamination. Additional mortality sources exceeding 5% appear to be unsustainable (Goudie et al. 1994).

MANAGEMENT RECOMMENDATIONS

Maintain woody debris and riparian vegetation in and adjacent to streams. A 50 m (164 ft) buffer along nesting streams is necessary to recruit suitable large organic debris for loafing sites and to ensure cover for nesting females and protective cover from predators (Murphy and Koski 1989). A larger buffer may be necessary on second growth stands. Logging activity in the riparian corridor should be avoided (Cassirer and Groves 1989, 1994).

Stream alterations that would cause greater surface runoff, changing water levels, or lower macroinvertebrate levels should be avoided (Kuchel 1977).

Human disturbance should be managed during the breeding and brood-rearing season (April-August). To limit disturbance, trails or roads should be farther than 50 m (164 feet) from streams used by harlequin ducks and should not be visible from the stream (Cassirer and Groves 1989). Fishing, rafting, and canoeing activities should be limited on streams used by nesting harlequins (Wallen 1987), especially in streams <20 m (66 ft) in width. The April through August nesting and brood-rearing period are the critical months to reduce disturbance.

Rocky shoreline areas used during winter should be protected. Disturbances at traditional coastal molting sites should be limited.

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PERSONAL COMMUNICATIONS

Ian Goudie, Wildlife Biologist
Canadian Wildlife Service
Delta, British Columbia

KEY POINTS

Habitat Requirements

- In the summer, adult harlequin ducks require fast-flowing streams with clear water, loafing sites, and dense bank vegetation.
- Broods require low gradient streams with an adequate macroinvertebrate food supply.
- During the nesting season, harlequin ducks require areas with little or no human disturbance.
- Harlequin ducks winter along rocky marine shorelines, frequently using kelp beds.

Management Recommendations

- Manage human disturbance during the breeding and brood-rearing season (April-August).
- Protect rocky shoreline areas used during winter. Limit potential disturbance at traditional coastal molting sites.
- Maintain woody debris and riparian vegetation in and adjacent to streams.
- A 50 m (164 ft) buffer along nesting streams is necessary to recruit suitable large organic debris for loafing sites. A larger buffer may be necessary on second growth stands. Provide nesting and hiding cover within this buffer.
- Logging activity in the riparian corridor should be avoided.
- Stream alterations that would cause greater surface runoff, change water levels, affect water quality, or lower macroinvertebrate levels should be avoided.
- To limit disturbance, trails or roads should be farther than 50 m (164 ft) from streams used by harlequin ducks, and should not be visible from the stream. Also fishing, rafting, and canoeing activity should be limited on streams used by nesting harlequins, especially if such streams are <20 m (66 ft) wide.

